

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD

1. Chemical: Sulfosate (Shaughnessy No. 128501)
2. Test Material: Formulated product: SC-0224 4-LC (liquid concentrate)

40.8% ai (as per proposed label of study sponsor)
3. Study/Action Type: Fish acute LC50

Rainbow trout (Salmo gairdneri)
4. Study ID: The acute toxicity of SC-0224 4-LC to the Rainbow trout (Salmo gairdneri)

Biospherics, Inc.
Project No. 82-E-1119R
Report date: November 1982
Study sponsor: Stauffer Chemical Company
Study location: EPA Accession No. 250545
5. Reviewed by: James D. Felkel
Wildlife Biologist
EEB/HED
Signature: *James D. Felkel*
Date: *1-20-87*
6. Approved by: Henry Craven
Supervisory Biologist
EEB/HED
Signature: *Henry T. Craven*
Date: *1/24/87*
7. Conclusions:

This study is scientifically sound. With a 96-hr LC50 of 5.7 mg/L, this formulation is considered "moderately toxic" to the rainbow trout. A data requirement for this study may be fulfilled with submission of photoperiod information and confirmation of exact formulation composition (i.e., whether exactly as shown in June 3, 1983 Confidential Statement of Formula).
8. Recommendations:

The study may be upgraded from supplemental to core for this formulation with the information cited in #7 above.
9. Background: N/A.
10. Discussion of Individual Test: N/A.

11. Materials and Methods:

- a. Test animals - Rainbow trout (Salmo gairdneri) from Trout Lodge, Washington State; mean length 45.2 mm (40.2 to 47.8 mm); mean weight 0.61 g (0.43 to 0.81 g); approximately 2 months old.
- b. Dosage form - In static bioassay, no solvent.
- c. Study Design
- (1) Range finding: - polystyrene containers
- 4 L test solution
- 4 fish/vessel
- 0.1, 1.0, 10, 100, 1000 mg/L
- 96 hr
- (2) Definitive: - glass containers
- 15 L test solution
- 10 fish/vessel
- control, 0.6, 1, 2, 4, 8 mg/L
- DO, temp., pH measured at beginning and every 24 hr
- 96 hr
- dilution water quality pH 7.0, hardness 115 mg/L as CaCO₃, alkalinity 128 mg/L as CaCO₃, source - 400' well
- (3) Statistics - Binomial probability method (Stephan 1979).

12. Reported Results:

DO - 5.6 to 9.3 mg/L

pH - 7.0 to 7.5

Mean temp. - 13.0 °C

24-hr LC ₅₀	> 8 mg/L
48-hr LC ₅₀	7 mg/L (4-infinity)
72-hr LC ₅₀	6 mg/L (4-8 mg/L)
96-hr LC ₅₀	6 mg/L (4-8 mg/L)
24-hr NOEL	4 mg/L
48-hr NOEL	2 mg/L
72-hr NOEL	2 mg/L
96-hr NOEL	2 mg/L

13. Study Author's Conclusions/QA Measures:

See above reported results. Test ". . . inspected by the Quality Assurance Unit according to Biospherics SOP 2.3.4 'QA Study Inspections'."

14. Reviewer's Discussion and Interpretation of the Study:

- a. Test Procedure: Polystyrene containers used in the range-finding test would not be acceptable in the definitive study.

Reported procedures for the definitive test were generally consistent with current guidelines (1982). However, photoperiod was not reported and water temperatures were measured daily rather than continuously as recommended by the Committee on Methods for Toxicity Tests with Aquatic Organisms (1975). Also, the 0.6-1-2-4-8-mg/L test series is not geometric, nor are all levels $> 60\%$ of the next level. Dilution water was harder than recommended (115 mg/L as CaCO_3 vs. 40 to 48 mg/L as CaCO_3).

- b. Statistical Analysis: A check of the statistical analysis was conducted and is attached.

- c. Discussion/Results: An approximate LC_{50} is determined to be 5.7 mg/L, very close to that reported in the study. The dose-response curve is very steep, with no mortality at 4 mg/L, but 100% mortality at 8 mg/L. The formulated product appears to be approximately 316X as toxic as technical material to the rainbow trout (technical LC_{50} with rainbow trout reported in August 9, 1983 EEB review: 1800 mg/L).

- d. Adequacy of the Study:

(1) Classification: Supplemental for this formulation.

(2) Rationale: While the study is scientifically sound, the photoperiod should be reported and the registrant must confirm whether the composition of formulation is exactly as described in the June 3, 1983 Confidential Statement of Formula.

(3) Reparability: Study may be upgraded to core for this formulation with submission of information cited above.

15. Completion of One-Liner for Study:

One-liner generated automatically by current computer program.

16. CBI Appendix: N/A.

J. FELKEL SC-0224 4-LC RAINBOW TROUT 12-15-86

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
8	10	10	100	9.765625E-02
4	10	0	0	9.765625E-02
2	10	0	0	9.765625E-02
1	10	0	0	9.765625E-02
.6	10	1	10	1.074219

THE BINOMIAL TEST SHOWS THAT 4 AND 8 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC_{50} FOR THIS SET OF DATA IS 5.656854.

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100. NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.
